

are used, which means free drainage, thorough ventilation and a method of approach which enables the surgeon to visualize the entire limits of the sinus cavity so that all diseased membrane can be removed.

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DISCUSSION

ROBERT C. MARTIN, M. D. (384 Post Street, San Francisco).—Doctor Wessels has taken a common-sense viewpoint in his paper, which is a difficult one to present because of the amount of ground covered.

This word of caution as to recognizing and being surgically conservative in regard to allergic noses is timely. It is failure to recognize these that has resulted in the bad repute into which nasal surgery has fallen.

It is true that any nasal surgery, to be successful, must be thorough, and in some cases responding poorly to intranasal procedures, the external operation on the ethnoids is indicated. There is often disappointment as to results on the frontal, if the Sewall technique is followed. We believe that antrotomies alone in dentally infected antra are efficient, if the cases are not of too long standing.

Doctor Wessels has brought out the fact that we are not primarily treating a nose but a patient, a truth sometimes lost sight of.

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CHESTER H. BOWERS, M. D. (1136 West Sixth Street, Los Angeles).—Doctor Wessels has brought the sinus problem up to date for us. In regard to the acute cases, I should like to particularly emphasize the point that the cloudiness to transillumination is due, not to pus, but to membranous edema. Many coryzas have acute antral symptoms with dark antra, but clear up readily with shrinkage alone and without purulent discharge. We should not be too hasty in shrinking acute antras, but should first treat nasal disease locally and employ measures directed toward the general condition for several days. Operative failure in chronic cases has been largely due to too hasty surgery and insufficient study, with resultant incorrect diagnoses. In most cases general care, along with conservative therapy, should be given a fair trial before resorting to surgery. In ethmoidal and sphenoidal diseases the Proetz treatment should be instituted before any operative procedures are advised. When surgery is indicated, I believe, with Goodyear, that our tendency should be toward conservative surgery of restoring breathing space, allowing ventilation and establishing drainage. If this is done, fewer "complete" operations will be found necessary. Finally, may I stress the great importance of two things: first, histopathologic and bacteriologic study of our cases and, second, the close relationship existing between sinus disorders, diet allergy, and the endocrines.

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REA ASHLEY, M. D. (384 Post Street, San Francisco). Doctor Wessels mentions several points which, to me, are very important and merit emphasis: They are:

1. After reasonable local medical measures have failed and surgery is necessary, the surgical procedure should be complete enough to correct the underlying pathologic condition.

2. The rhinologist must be constantly on the watch for allergically sensitive noses, and operate them only after other methods fail.

3. The radiologists have improved their technique in making radiograms to the point where good x-rays are invaluable in making the diagnosis of sinus disease.

4. Dry climate certainly benefits many patients where surgery fails.

5. Finally, the treatment of chronic sinus disease is successful only when complete operative measures are used, and by this is meant free drainage and thorough ventilation.

THE LURE OF MEDICAL HISTORY*

FIFTY YEARS OF PROGRESS IN THE PREVENTION OF DISEASE†

By J. C. GEIGER, M. D.
San Francisco

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TYPHOID FEVER

TO immunize against the several diseases means their almost certain elimination. The lowering of the mortality of diphtheria presents one of the interesting chapters on the value of research in the discovery and the use of antitoxin. Another outstanding achievement is the control of typhoid fever, now so infrequently seen that it may be considered uncommon and even rare; but a few years ago it was one of the commonest "fevers." Early in this century major cities of the United States and other countries expected and experienced periodic outbreaks of the disease, but today medical educators have no little difficulty in obtaining cases of typhoid fever for class demonstration purposes.

Certain communicable diseases show more or less regular cycles of incidence. This has been well demonstrated in measles, influenza, poliomyelitis, and other diseases. It is believed by many that this may be true in tuberculosis, but that the cycle is of a longer period. In typhoid fever, while there may be minor cycles, there has been a steady and progressive decline in the incidence. Outbreaks occur, however, in spite of the fact that the epidemiology of the disease is clearly understood and in spite of the brilliant record made. This would indicate either that there are other avenues of transmission as yet unknown, or that the application of measures demonstrated to be effective is not rigorously carried out. The latter explanation is obviously correct: we do not place in full operation the available control measures.

The experience in the armed forces of the United States and of the other great nations clearly demonstrates what can be done in controlling typhoid fever. The incidence in the army during the World War was so low that the Surgeon-General's report stated that "typhoid and paratyphoid fevers are of minor importance." In a group of 1,900,000 men, there were fewer than 900 cases of typhoid fever, an incidence of less than one-half per thousand. This is an enviable record, especially when one considers the incidence during earlier years. The Russo-Japanese War, with the rigid application of modern sanita-

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† One of a series of public lectures by invited speakers, conducted by the Stanford University School of Medicine. From the Department of Public Health, San Francisco.

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tion and immunization methods by the Japanese and the relative lack of such measures in the opposing Russian forces, showed conclusively the value of control measures. The morbidity and mortality rates were markedly higher in the latter group.

In contrast with these demonstrations in military groups, there are but few instances on record of such a program applied to a civil population. The eradication of the disease will be possible only when there is placed in operation a plan which shall include some of the features of the military program. Sanitary engineering has protected the water supplies of cities willing to pay for such service. Efficient health officials safeguard the milk supply through dairy inspection, pasteurization, and milk-handler examination. Attempts are made to follow the carriers of *B. typhosus*, but this presents many difficulties. Immunization against the disease is offered and encouraged, but this advantage is not accepted as readily as it should be.

Typhoid fever is a preventable disease. Its continued presence is a challenge to the conscientious health official. The public must be informed of the necessity of protection by vaccination, if they will persist in drinking from open streams of "clear, cold mountain waters," which very frequently are polluted by deposits of human excreta, and if they continue to frequent beaches upon which is turned untreated or raw sewage. The program, in addition, should include the search for bacillus carriers, particularly in food handlers, and the follow-up of all known carriers at regular intervals. It is essential, of course, that the active case of typhoid fever be isolated, and that the bodily discharges be effectively disinfected. The justification for quarantine in typhoid fever, however, is questioned. There is no valid reason why a case of typhoid fever may not be cared for in the open general ward if certain simple measures are carefully executed.

Typhoid fever will continue to exist, probably, unless the contributions of modern sanitary science are thoroughly utilized. The time has passed when we can carelessly dispose of sewage and other devastating wastes by turning them into the nearest lake, stream, or bay. Man wants a protected water supply, yet he frequently disregards all consideration for his neighbor and even pollutes his own supply. Modern methods of sewage disposal and water purification are not prohibitive in their cost, and conditions demand that such installations be made everywhere in the not too distant future.

DIPHTHERIA

Diphtheria is a specific infectious disease caused by a rod-shaped organism called the Klebs-Loeffler bacillus. The site of the disease is usually in the nose, throat, or larynx, the constitutional symptoms being caused by a toxin liberated by the growing germ. The disease is spread by direct contact with people who have the disease, or with carriers—people who harbor the organism in the nose and throat, and yet are immune to the disease.

Owing to the liberation of the soluble toxin, the disease may be controlled in the patient by the early administration of antitoxin. The usual rules for isolation of the patient are in force just as in scarlet fever.

Children need not have diphtheria. It can be prevented by a simple harmless treatment with toxin-antitoxin or toxoid. In contrast with scarlet fever, no disease lends itself to a prevention program like diphtheria. Since the introduction of vaccination against smallpox, no form of active immunization against a communicable disease in the civil population has received such widespread acceptance by the public, and such general endorsement of the medical profession, as toxin-antitoxin immunization against diphtheria.

In a study of over one hundred of the larger American cities, Armstrong and Walker found that nearly all are doing some toxin-antitoxin immunization among school and preschool children, mostly, however, among children of school age. Only five cities had secured immunization of 25 per cent of the school children. So generally accepted has toxin-antitoxin become that the appraisal form of the American Public Health Association gives full credit for diphtheria control only to cities which have secured immunization of at least 25 per cent of their preschool population.

In San Francisco toxin-antitoxin immunization was begun in 1925. Since that time, 22,714 children of preschool and school ages have completed immunization. Practically all of the work has been done in the public and parochial schools in the kindergarten and first grade. Immunization is offered to San Francisco children of preschool age in the nine infant welfare stations of the Department of Health.

One of the striking features in San Francisco mortality and morbidity statistics of the past few years is the remarkable decline in morbidity and mortality in diphtheria. From 1,725 reported cases with 116 deaths in 1924, the number has decreased to 144 reported cases with five deaths in 1931. A similar decline in diphtheria has occurred in a number of large American cities during this period, and in New York City the Health Department has attributed it to toxin-antitoxin immunization of school children. The reported San Francisco cases and deaths from diphtheria, together with the number of individuals immunized, have been tabulated as follows:

Year	Cases of Diphtheria	Deaths	Immunization
1921.....	1710	141
1922.....	1517	119
1923.....	1708	148
1924.....	1725	116
1925.....	623	37	1605
1926.....	612	31	1110
1927.....	572	21	5277
1928.....	415	20	1049
1929.....	360	17	3600
1930.....	264	14	3606
1931.....	144	5	6457

The fact that as rapid a decline in diphtheria mortality in the various age groups occurred in San Francisco, as in many cities that attributed a similar decline to toxin-antitoxin immunization,

should make us critical of unanalyzed figures on the causative relation of that procedure to the falling diphtheria mortality.

Although San Francisco figures are not available to indicate the value of toxin-antitoxin, there is ample evidence of its efficacy where immunization has been extended to a considerable proportion of the population. In Auburn, New York, a city of 36,000, where 85 per cent of the school children have been immunized, Sears reports that in the past three years cases have been reduced from about eighty-five to five per year, and deaths from fifteen to one, and that one a questionable diphtheria case.

An intensive study of some 8,000 children immunized in Providence shows that approximately 90 per cent of the children who received three injections of toxin-antitoxin were subsequently protected against diphtheria. As few of these children were retested (Schick), it is probable that such cases as did occur were in children who failed to acquire immunity in one course of injections. Among 15,000 children immunized or naturally Schick-negative, the prevalence of diphtheria has been only one-tenth of the rate in the same group of the rest of the population.

If toxin-antitoxin is to play any important part in the control of diphtheria, it is self-evident that a considerable proportion of the children in the more susceptible age groups must be immunized. The ideal procedure would include immunization of the preschool group, say, from one to four years. Immunization at this time would carry the child over the period of highest fatality and greatest susceptibility to diphtheria. On account of the administrative difficulty in reaching children of this age, it is questionable whether large cities will be able to secure immunization of a sufficient proportion of this population to control diphtheria. Immunization of pupils in the kindergarten and first grade leaves unprotected the children at the ages in which the highest case fatality from diphtheria occurs; but, from the administrative standpoint, it is probably the most practical scheme.

If any considerable proportion of the school children are immunized, there is also a definite reduction in the exposure in the home of younger children who are themselves less liable to come in contact with cases. No one has yet shown just what proportion of the population needs to be immunized to prevent any serious spread of a disease of low infectivity such as diphtheria, but it can be seen off-hand how rapidly the increase of immunes decreases the opportunity for effective contact between susceptibles.

Although there is no evidence that toxin-antitoxin has been an important factor in the marked decline of diphtheria in San Francisco and elsewhere for the past six years, there is every reason to believe that if immunization is extended to a considerable proportion of the children in the most susceptible age groups, it can be more definitely the deciding factor in the ultimate control of diphtheria.

(To be continued)

CLINICAL NOTES AND CASE REPORTS

SOLID TERATOMA OF OVARY

By R. W. BINKLEY, M. D.
Selma

IN going over the literature on teratomata of the ovary, one is at once impressed by the lack of uniformity in classification of these growths, and also the admission, by practically all writers, of the inadequacy of the present classification.

By most of the writers, for example, they are divided into cystic teratomata and solid teratomata, both forms being called teratomata owing to the fact that the histogenesis of the two is apparently the same. Then, in speaking of this growth, one must qualify the type to which reference is made, since, from a clinical standpoint, they are vastly different.

Because most of us are familiar with the term "dermoid cyst, and with the growth itself, it seems that a clearer classification is that of Lynch, who on account of their common origin, classifies them as embryomata (a term which in itself gives a clue to the origin) and then subdivides embryomata into (a) dermoid cysts and (b) teratomata. With this classification, one must not confuse the ovarian dermoid, or cystic teratoma, with the true dermoid of ectodermal cell inclusions along the lines of embryonic fusion. Both types of embryomata are potentially tridermal, though at times all three layers may not be demonstrable, and the essential difference histologically is in the age of their embryonic cells.

The dermoid has progressed in a more orderly way toward the formation of definite organs, though very imperfect; while the teratoma has advanced too rapidly to develop a definite pattern, and is composed of a jumbled mass of embryonic cells with little attempt at organ formation. Askanazy proposes the name "teratoma embryonale" for the solid ones, and "teratoma adultum" for the dermoid cysts.

The histogenesis of these two types of growth is still conjecture, and neither of the two advanced theories, nor a combination of the two, will as yet serve without criticism.

The blastomere theory of Marchand and Bonnet is favored by some writers as adhering more closely to nature's fundamental principles; but by this theory it is difficult to explain authentic cases of ten dermoids in one ovary, and eleven in another. The multiple origin of ovarian dermoids is best explained by the germ cell theory of Wilms; but this theory, too, fails in explaining such growths as occasionally occur remote from the ovary.

It is evident that if they have their beginning early enough, the cells from which they arise are totipotent and capable of giving rise to ectoderm, entoderm, and mesoderm.

Admitting a common origin of all embryomata, from a clinician's viewpoint, they are widely dif-